

AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A speech decoding device which decodes speech signals by using received feature parameters representing gain and representing spectral envelope characteristics, the device comprising:

a voice/voice-less detecting circuit for detecting if said speech signals are classified in a period containing voice, denoted as a voice period, or in a period that does not contain voice, denoted as a voice-less period; and

a voice-less decoding circuit for intermittently receiving said feature parameter representing spectral envelope characteristics to decode a current frame of the speech signals in said voice-less period, the voice-less decoding circuit performing said decoding by smoothing said feature parameter representing spectral envelope characteristics of said current frame and synthesizing said speech signals of said current frame based on a smoothed feature parameter representing spectral envelope characteristics of said current frame and said feature parameter representing a gain of said current frame,

wherein said smoothing is performed by weighting a smoothed feature parameter representing spectral envelop characteristics of an immediately preceding frame and a feature parameter representing special envelope characteristics of said current frame and by adding the weighted smoothed feature parameter representing spectral envelope characteristics of said immediately preceding frame and the weighted feature parameter representing spectral envelope characteristics of said current frame,

wherein a value of a weighting factor used in said smoothing is changed according to a number of frames which have been received in prior voice-less periods, and

wherein when no feature parameter representing spectral envelope characteristics is received in said current frame, the smoothing is performed using said feature parameter representing spectral envelope characteristics received before the current frame in place of said feature parameter representing spectral envelope characteristics of said current frame.

Claims 2-15. (Cancelled)

16. (Original) The speech decoding device of claim 1, wherein when a length of a voice period immediately before a first voice-less period is shorter than a predetermined length, a value of

a feature parameter which is finally transmitted in a second voice-less period immediately before the voice period is used as an initial value of smoothing.

Claims 17-21. (Cancelled)

22. (Original) The speech decoding device of claim 1, wherein the feature parameters includes at least one of a quantity representing spectral envelope of the signals to be decoded and a quantity representing power of the signals to be decoded.

Claims 23-27. (Cancelled)

28. (Original) The speech decoding device of claim 1 being included in a speech coding/decoding device with a coding device which determines whether the input signal is in a voice period or in a voice-less period for each frame and encodes the feature parameters of the input signals to output.

Claims 29-33. (Cancelled)

34. (Currently Amended) A method of decoding speech signals in a speech decoding device by changing a decoding operation corresponding to received feature parameters representing gain and representing spectral envelope characteristics according to whether the speech signals are classified as a voice period or a voice-less period, the method comprising the acts of:

detecting if said speech signals are classified in a period containing voice, denoted as a voice period, or in a period that does not contain voice, denoted as a voice-less period;

smoothing, by the speech decoding device, said feature parameter representing spectral envelope characteristics of a current frame of the speech signals to be decoded in said the voice-less period, wherein said smoothing is performed by weighting a smoothed feature parameter representing spectral envelope characteristics of an immediately preceding frame and said feature parameter representing spectral envelope characteristics of said current frame and by adding the weighted smoothed feature parameter representing spectral envelope characteristics of said immediately preceding frame and the weighted feature parameter representing spectral envelope characteristics of said current frame,

changing a value of a weighting factor used in said smoothing according to a number of frames which have been received in prior voice-less periods, and

wherein when no feature parameter representing spectral envelope characteristics is received in said current frame, said smoothing is performed using a feature parameter representing spectral envelope characteristics that was received before the current frame in place of said feature parameter representing spectral envelope characteristics of said current frame; and

decoding, by the speech decoding device, the speech signal using the smoothed feature parameter representing spectral envelope characteristics of said current frame and said feature parameter representing a gain of said current frame.

Claims 35-50. (Cancelled)

51. (Previously Presented) The method of claim 34, wherein the feature parameters includes at least one of a quantity representing spectral envelope of the signals to be decoded and a quantity representing power of the signals to be decoded.

Claims 52-56. (Cancelled)

57. (Currently Amended) A computer readable non-transitory storage medium which stores a computer executable program performing a method of decoding speech signals by changing a decoding operation corresponding to received feature parameters representing gain and representing spectral envelope characteristics according to whether the speech signals are classified in a period containing voice, denoted as a voice period, or in a period that does not contain voice, denoted as a voice-less period, the computer executable program operable to, when executed by a computer processor, perform the acts of:

detecting if said speech signals are classified as a voice period or a voice-less period;

smoothing said feature parameter representing spectral envelope characteristics of a current frame of the speech signals to be decoded in said voice-less period, wherein said smoothing is performed by weighting a smoothed feature parameter representing spectral envelope characteristics of an immediately preceding frame and said feature parameter representing spectral envelope characteristics of said current frame and by adding the weighted smoothed feature parameter representing spectral envelope characteristics of said immediately preceding frame and the weighted feature parameter representing spectral envelope characteristics of said current frame,

wherein a value of a weighting factor used in said smoothing is changed according to a number of frames which have been received in prior voice-less periods, and

wherein when no feature parameter for spectral envelope characteristics is received in said current frame, said smoothing is performed using a feature parameter representing spectral envelope characteristics that was received before the current frame in place of said feature parameter representing spectral envelope characteristics of said current frame; and

decoding the speech signal using the smoothed feature parameter representing spectral envelope characteristics of said current frame and said feature parameter representing a gain of said current frame.

Claims 58-73. (Cancelled)

74. (Previously Presented) The speech decoding device of claim 1, wherein smoothing in a subsequent period is performed even when a new feature parameter is not received.

Claims 75-78. (Cancelled)

79. (Previously Presented) The method of claim 34, wherein smoothing in a subsequent period is performed even when a new feature parameter is not received.

Claims 80-83. (Cancelled)

84. (Previously Presented) The computer readable storage medium of claim 57, wherein smoothing in a subsequent period is performed even when a new feature parameter is not received.

Claims 85-88. (Cancelled)